Pediatric Feeding and Dysphagia Newsletter

Dear Fellow Feeders:

Well, it's that time again, our last issue of the season. I always sigh a bit at this point, look back over the issues and wonder if I will continue writing the newsletter for an incredible 8th year. For those of you who don't know, this small publication travels to 38 states and 4 countries. I've made colleagues and friends through my various interactions, learned about programs, courses, techniques, research and more.

I'm not quite ready to give it up. I started this newsletter in 1999 because I felt as if the various disciplines involved in feeding did not have a forum to talk to each other. I still feel very passionate about what we do-the simple act (or not so simple attempt) at teaching a child to enjoy eating, helping a family to feed their child, giving the child the ability to eat and handle a variety of foods. We don't have all the answers yet and there is still work to be done... Enjoy, Krisi Brackett

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Special Points of Interest:

- ☺ Current information
- ☺ New products
- ☺ Research and publications
- ☺ Education

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Part 2: Best Practices for Behavioral Management of Pediatric Dysphagia

by Jacki Ruark McMurtrey, Ph.D., CCC/SLP, Univ of Central Arkansas, jackir@uca.edu

Rehabilitative strategies

Rehabilitative strategies when employed over time may lead to more permanent changes in swallowing function. Techniques used with children that are similar to adults include oral motor exercises and swallowing maneuvers. There are limited outcome data that supports the effectiveness of rehabilitative therapy techniques in treating dysphagia in children. Historically, oral motor therapy has focused on: "the development of coordinated movements of the mouth, respiratory, and phonatory systems for communication, as well as for oral feeding" (Morris, 1998).

Two main reasons why swallowing therapists use oral motor exercises to treat pediatric dysphagia are to improve underlying motor impairments and/or enhancing motor development for swallow functioning (Clark, 2003). Clinicians employ different types of oral motor exercises, depending on their clients' symptoms, their cognitive/receptive abilities, motoric abilities and compliance abilities. Exercises may include: strength training exercises, stretching and ROM exercises, and physical modalities (passive stimulation provided to muscles). Strength training is used to counteract muscle weakness by improving muscle strength and endurance. Active exercises similar to adults' may be performed by children who are able to follow directions (Newman, 2000). These exercises may include pushing oral musculature against resistance and/or holding oral structures in sustained postures for several seconds. Exercises used to target a specific muscle group in the adult dysphagic population may also be used with older children. For example, the Masako maneuver (also known as the tongue holding exercise) may be performed to strengthen tongue base and posterior pharyngeal wall movement during swallowing. In order to execute this maneuver, a child is taught to hold his/her anterior tongue with their central incisors as they practice swallowing. When teaching a child how to perform the tongue-holding exercise, the swallow clinician must instruct the child to never perform the exercise with food or drink. Research in adults has shown that the Masako maneuver increases pharyngeal residue and a pharyngeal delay time if used with a bolus

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(Fujiu & Logemann, 1996). The effects of such maneuvers on the pediatric population are unknown, and their effects on swallowing should be monitored closely during treatment. In younger children, oral exercises can be in the form of play activities (e.g., blowing bubbles or whistles). The efficacy of using unrelated movements, however, to enhance the highly programmed motor responses required for swallowing is unclear (Hukabee & Pelletier, 1999). There are many unanswered questions regarding the use of active exercises in the pediatric population. Future research should focus on the following questions: (1) How many repetitions of an exercise are needed? (2) How frequent should an exercise be performed? (3) What structures will benefit from active exercises? (4) Should movements be executed in a specific manner? Information from allied research suggests that for strength training to be effective, muscles need to be stressed beyond their normal level of exertion (Clark, 2003). Muscle exertion needs to be intensified by increasing repetitions, or the amount of resistance, and a recovery period is needed to allow muscle tissue to rebuild between training sessions (Kisner et al., 1996). In addition, movements during exercises need to be specific- the muscle/structure should move the way it moves during the target behavior (Frontera, et al., 1999).

Stretching or range of motion (ROM) exercises involves moving muscles beyond their realm of typical movement (Clark, 2003). Abnormal muscle tone is affected by stretching: quick stretching increases muscle tone by eliciting a stretch reflex. Slow stretching decreases muscle tone by inhibiting the stretch reflex. The effects of these exercises on swallowing disorders in children have yet to be investigated. The lips and tongue do not have a typical stretch reflex pattern (Neilson, et al., 1979) thus stretching may not affect tone, or movement in these structures (Clark, 2003). Active ROM exercises can be used with the older, pediatric population to improve the extent of movement of their oral/pharyngeal structures. Movements during ROM exercises that mimic movements employed during swallowing may be most appropriate such as tongue tip elevation to the alveolar ridge, or tongue lateralization within the oral cavity.

Erika Gisel and colleagues have conducted several studies that focused on the effects of oral motor exercises on oral abilities and weight gain. Gisel (1994) examined the effects of oral sensorimotor treatment in 35 children with cerebral palsy with moderate eating impairments. Children were assigned to three groups: a. sensorimotor treatment group; b. chewing-only treatment group; & c. control group (received 10 weeks of no treatment, followed by 10 weeks of sensorimotor treatment). Treatment was provided 5-7 minutes per day for a total of 20 weeks. The sensorimotor treatment focused on three main areas: tongue lateralization (e.g., small drop of peanut butter place on lateral border of tongue), lip control (e.g., lip closure around a licorice stick), and vigor of chewing (placing a small biscuit bolus between molars while child was instructed to chew). Post treatment measures included the child's oral abilities during: spoon-feeding, biting/chewing, cup drinking, and straw drinking. The effects of treatment on drooling during meals, oral containment of food, and weight gain were also noted. Findings of the investigation were not statistically significant, however, observations of the participants revealed some improvements in oral control during feeding. The sensorimotor treatment group (Group A) demonstrated improvements in spoon feeding. The chewing-only treatment group (Group B) and the control group (Group C) demonstrated improvements in chewing only. Most all improvements in feeding were demonstrated after the children received 10 weeks of therapy. Findings also revealed that there was a 50% reduction in drooling during meal time observations. In regard to weight gain, the children maintained their weight but did not show any catch-up growth. This investigation demonstrated that oral motor treatment has some positive effects on feeding in children with swallowing disorders. The author of the investigation also suggested that if children do not demonstrate improvements in oral motor abilities after 10 weeks of oral motor therapy, other means of intervention should be investigated. Also, clinicians should be cautious when using means such as peanut butter to elicit oral motor behaviors, especially with children who can not tolerate any amount of aspiration. Other studies by Gisel have also demonstrated positive effects of oral motor treatment on swallowing. For example, Gisel (1996) found that the meal time of children with cerebral palsy (35 children with moderate eating impairment) decreased by 5 minutes after receiving oral sensorimotor therapy, and the efficiency of their oral behaviors during feeding improved.

Physical modalities are used indirectly to enhance muscle coordination and are usually performed in conjunction with oral motor exercises and/or prior to feeding. Physical modalities are applied to muscles/structures and include: massage (stroking), tapping, and vibration. Massaging a muscle prior, or during feeding may relieve muscle spasms, decrease muscle tone, and increase mobility (Clark, 2003). Massage has been used to improve movement of the tongue, velum, jaw, and lips. Massage should be used carefully with those who are orally defensive and/or have a hypersensitive gag reflex (Clark, 2003). Tapping over target muscles is used prior to, and during feeding, to stimulate the stretch-reflex (and increase tone). Vibration of the oral musculature in children has

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also been used to elicit muscle contraction, increase tone, and inhibit antagonistic muscle contraction. This modality may affect jaw closing activity as the masseter is richly supplied with muscle spindles. Patient selection is critical as vibration may increase tremor and enhance abnormal muscle tone (McCormack, 1996). Review of the literature revealed one study that focused on the affects of vibration on oral motor control. Grant (1982) used a manual vibrator to provide stimulation to the oral area and masseters of four subjects (6 & 7 years of age). Each child received two sessions per day (for 1 minute per session; 8 months of treatment). The frequency of vibration was not mentioned. In addition, the children received oral motor and articulation therapy in conjunction with vibratory application. After 8 months of treatment, the children in this investigation showed improvement in tongue tip elevation and a decrease in tongue thrusting and drooling. The effect of vibration on the oral motor abilities of these children, however, could not be attributed to application of vibration as the participants received several types of therapies at one time.

Swallowing maneuvers

Swallow maneuvers are used with the adult population to change bolus flow and the timing and duration of swallow-related events (Suiter & Easterling, in press). Some swallowing maneuvers may be seen as rehabilitative in nature because if performed repeatedly, that may change the physiology of the swallow. A child must have adequate cognitive, receptive, and motoric abilities to perform a maneuver successfully. There are clinical reports that children as young as two years of age can hold their breath during swallowing, and/or voluntarily cough after swallowing (Logemann, 2000). Children may also be taught to produce an effortful swallow to increase muscle contracting during swallowing. Each maneuver should be assessed during an instrumental examination to assure its effectiveness and safety. In the adult population, maneuvers such as the effortful swallow and the superglottic swallow have been shown to have negative affects on swallowing in some individuals (these effects were noticed during videofluoroscopy).

In conclusion, evidence that supports the use of behavioral management techniques to treat pediatric dysphagia is neither plentiful nor conclusive. The study of pediatric dysphagia has developed from a clinical base; the challenge now is to focus on unanswered questions and identify future areas of research (Reilly & Perry, 2001). To provide children with dysphagia with the most effective treatment, swallowing clinicians need to rely on clinical experience, their understanding of anatomy/physiology and available research. When there is limited evidence regarding behavioral treatment approaches for pediatric swallowing disorders, clinicians must search for indirect evidence and its applicability. One area of concern, however, is transferring findings from adult studies to childhood disorders. The structural and functional differences between the immature and mature swallowing mechanisms may have significant effects on the effectiveness of behavioral treatment techniques on pediatric swallowing disorders.

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FEEDING BEHAVIORS –THE TIP OF THE ICEBERG

Suzanne Evans Morris, Ph.D.

Society tends to label and classify most events in a two dimensional "either–or" way. Multidimensional views are more complex and offer less certainty of cause and outcome. This is particularly true for children whose feeding difficulties are expressed through an aversion or resistance to eating. Although components of the feeding challenge may be described, the label of a "behavioral feeding problem" frequently is applied. For decades medicine classified illness as physical or psychological. Although many doctors still make this distinction, we now know that this is not accurate. There is such a total connection between the body and mind that every illness has both physical and psychological components. We know that our thoughts and emotions can strongly influence the medical course and outcome of a disease or illness that is reflected in the physical body. We also know that the presence of an illness or physical problem strongly influences our emotions and our responses to the underlying problem.

Basically, every problem or illness is a mind–body problem. Every child who has difficulties with eating is responding along a mind–body continuum. Some children may begin their journey into feeding problems with physical, sensory, respiratory or gastrointestinal difficulties that make eating uncomfortable or unsafe. These children make choices to alter their eating patterns to take care of themselves. Their beliefs, emotions and experiences strongly influence the path that they will take in moving toward or away from eating. Not all children will respond in the same way to the same events. Thus, one child with severe reflux will refuse to eat when he has esophagitis but be content to eat small amounts when the esophagus has healed. Another child may perceive a much smaller amount of reflux as dangerous and painful and refuse to eat at all. Still another will perceive the sensations of food pressure in the esophagus as painful and eat only enough to take the edge off of his hunger, even though acid reflux is no longer present. One child with severe eating coordination problems related to cerebral palsy will struggle to eat and remain a functional oral–feeder. Another who has lesser coordination problems will tire and decide to stop eating before his nutritional needs are met. One child who consistently aspirates large amounts when swallowing will become very upset if she is not allowed to eat or drink; another child who aspirates a small amount intermittently will become highly cautious and limit the amount eaten.

Children who experience stress from external pressures to eat or the memory of earlier discomfort may become highly fearful about eating. These stresses can increase tension in the body, reducing physical coordination, increasing negative sensory perceptions, reducing gastric emptying, increasing reflux and limiting digestion. These are all direct physical difficulties that interact with the child's mind and emotions. How can one say that a child simply has a "behavioral feeding problem"? What are the alternatives? We could begin by shifting our beliefs to consider that all children, (even the youngest babies) are doing the very best they know how to take care of themselves based on their beliefs and experiences. Children who choose not to eat are doing so for a reason and they perceive this as a way to take care of themselves and their needs to feel safe and be comfortable.

Every choice we make is a behavioral choice. I am, choosing the behavior of putting these thoughts into written form. Why? Because for my own reasons I perceive that this is in my best interest right now. It is an important way for me to organize my own thoughts and share them with others; and I like doing that. You are choosing the behavior of reading and responding to these words. Why?

You have your personal reasons, which represent your way of doing what you believe will support your best interests. There are physical and behavioral components for every child who is dealing with feeding challenges. If we are going to address these problems in an effective way, we need to incorporate approaches that acknowledge this and address the total picture. We need to help our children know that they have many alternatives and choices. Some children become very stuck in something that has worked for them in the past. Most adults can find similar examples of habitual, ineffective choices in their own lives. They need our help in discovering that they can be both safe and comfortable in developing a new relationship to food and mealtimes. We need to help children explore and

discover easier and more coordinated ways of eating and help them develop the oral-motor skills that may be missing or delayed because of lack of experience or difficulties in the sensorimotor areas. We need to explore stress-reduction strategies that can reduce fear and ease the impact of gastrointestinal discomfort. Trying to eliminate a behavioral choice that we don't like can actually increase the child's negative or aversive behaviors if the underlying reason for that choice of behavior is still present. We can support the child and encourage other choices as we help all children build their inner wanting to eat and the skills to do so. Professionals and parents who apply the label "behavioral feeding problem" to children limit their ability to see and honor the interplay between the mind and body components of the child's responses. Through a belief that behavioral choices should be modified and eliminated, the underlying reasons for these choices become ignored. Feeding therapy is directed at the tip of the iceberg–the symptoms or behaviors that the child manifests. This is similar to the tendency in conventional medicine to treat a disease with medications that suppress or deal strictly with the symptoms, rather than addressing the underlying causes of the condition.

An effective feeding therapy program addresses multidimensional problems with multidimensional approaches. It considers and honors the mind and body roots of the child's preference for eating and drinking in a limited way.

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Best Practices for Behavioral Management of Pediatric Dysphagia Continued

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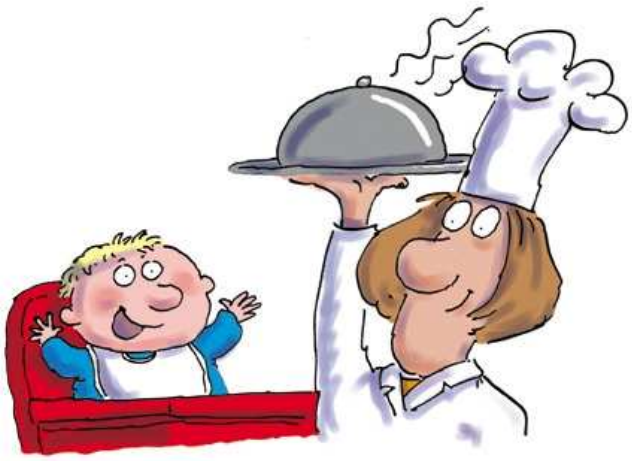

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Case by Case: An interesting demonstration.....

By Krisi Brackett MS SLP/CCC

I give feeding workshops all over the country– in all of my courses I do live demonstrations. I ask attendees to bring in 1 or 2 kids they are stuck on and want another opinion. Thus far, I have had great success with this-parents are willing to come, the kids have not been traumatized (on the contrary they have done quite well for the most part), and sometimes families leave feeling like they just need 30 people in the background cheering while their picky eater takes a bite. Seriously, this is a short story about one of my recent demo's.

History: Amy is a healthy 3 year old who was a former 24 weeker without any brain bleeds. She has progressed nicely with her development in every area except feeding. She has a g-tube and nissen fundoplication, is 100% g-tube fed boluses of Pediasure during the day and continuous feedings at night. She refuses most oral food, occasionally will suck on a grape or goldfish cracker. Therapy is focusing on oral motor therapy and trying to encourage her to eat crackers with poor success. Amy's mother reported that she had daily vomiting (despite the nissen), was not on any GI meds since the nissen placement and displayed little to no signs of hunger. She actually stated to the group that if she did not learn to eat, then she would have to learn to do her own tube feedings!

Observed: I asked Amy's mother to attempt to feed her. She offered her yogurt, crackers, cheese, and pudding. She refused everything by blocking with her hands, grimacing and turning away. Meanwhile, she was running from person to person, smiling, laughing and enjoying the attention.

Intervention: I called Amy over and showed her a toy that I had (actually a tape measure shaped like a cat). I presented a dry spoon (spoon with no food) and asked her to open her mouth. She hesitated at first, accepted the "pretend bite" and I rewarded her with the toy. After 30 seconds, I took it away. We repeated this sequence about 6 more times. I then decided to be brave and offer a bite of the yogurt. Surprisingly, she accepted. We then repeated our sequence of small bite of yogurt followed by 30 seconds of play about 10 times. Full acceptance from Amy. Needless to say, her mother and therapist were amazed. I was also surprised and encouraged by her response.

Recommendations: I recommended several ideas to Amy's mother. First, to establish gut comfort, I asked her mother to talk with her doctor about putting Amy on an acid blocker, slow her tube feedings, and consider a medication to increase her appetite and relax her stomach (like periactin). I then, asked her to continue with 3-4 feeding's per day using the behavioral approach to improve her acceptance of bites of purees (by giving her an external reason to accept). I recommended that she stop offering her foods that required chewing since Amy was not developmentally ready to chew.

Results: Amy's mom emailed me 2 weeks later; she was on Prevacid and Periactin. Vomiting stopped. She was using the behavioral technique and Amy was accepting 5—6 ounces of puree 4X per day. Day tube feeding were stopped and she only needed nighttime continuous. She's on her way!

PARENT ACCEPTABILITY OF VARIOUS TREATMENTS USED IN THE TREATMENT OF PEDIATRIC FEEDING DISORDERS Annmarie Marando, Merrill Berkowitz, Paula Tokar, Jaymie Mooers & Veronica Armellino

The fields of behavioral psychology and speech pathology have provided a variety of interventions that have been shown to be effective for increasing the exposure and consumption of a variety of foods and textures in children with feeding difficulties (e.g., Babbitt, Hoch, and Coe, 1994). Treatment acceptability may be a factor in predicting caregiver integrity. (Sterling-Turner & Watson, 2002). A few studies examining the effectiveness of specific interventions related to pediatric feeding have included components of social validity and acceptability (e.g., Ahearn et al., 1996). The current study examines parents' ratings of acceptability toward commonly recommended treatment procedures related to pediatric feeding disorders across two disciplines (behavioral psychology and speech pathology).

PARTICIPANTS AND DEPENDENT MEASURES

Twenty parents of children admitted to an intensive day treatment program for the assessment and treatment of their feeding difficulties participated in the current study. The mean rating on a 5-item checklist, based on the Intervention Rating Profile (Witt & Martens, 1983), was used to assess parent acceptability of each of the procedures. Ratings for each item were obtained using a 5-point Likert scale with 1 indicating strong disagreement and 5 indicating strong agreement. Higher ratings indicated higher levels of acceptability.

PROCEDURES

At the beginning and end of the child's day treatment admission, the parent viewed videotape containing descriptions and demonstrations (therapists role-playing) of each treatment procedure. The parent was also provided with a written description of each of the procedures. After each procedure was demonstrated, the parent was instructed to complete the 5-item checklist for that procedure. When the parent responded to all 5 items and indicated that they had finished the next procedure was viewed.

RESULTS

Overall, parents rated most of the procedures as acceptable with mean ratings above 3.5. Parents viewed the oral-motor and reinforcement delivery procedures as more acceptable than the spoon presentation procedures at pre-admission. Physical guidance was rated as the least acceptable procedure at both pre- and post-admission.

An observable difference was shown in parental acceptability rating between pre and post admission for 9 of the 10 procedures. Higher rates of acceptability occurred in these interventions at the post session. In both the pre- and post-admission ratings there was more variability with the spoon presentation procedures as compared to the reinforcement delivery and oral-motor procedures.

DISCUSSION

This study provides some information regarding parents' initial perceptions of various treatment procedures.

Although some procedures were not effective in improving some children's mealtime behaviors (e.g., NCR and 5-sec Fixed Time Presentations) some parents rated these procedures as highly acceptable at post-admission. This result may be due to overall satisfaction with the child's progress rather then actual acceptability of the intervention.

Additional research is required to determine if parent acceptability in the area of pediatric feeding disorders corresponds to parental adherence.

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THE EFFECTS OF EXPOSURE ON THE FOOD PREFERENCES OF CHILDREN PRESENTING WITH SEVERE FOOD SELECTIVITY Merrill Berkowitz, Peggy Eicher, Robyn Romot, & Annmarie Marando

The paired-stimulus assessment (Fisher et al., 1992) has been found to be a stable and valid method for identifying relative preferences among stimuli. Repeated exposure to a food has been found to increase the likelihood that an individual will prefer that food (Birch and Marlin, 1982). Children experiencing feeding difficulties often limit the number of foods they consume to a select few, thereby limiting their exposure to any unfamiliar foods. The current study examines the effects that repeated exposure has on the food preferences of two children presenting with severe food selectivity.

PARTICIPANTS AND DEPENDENT MEASURES

Jimmy, a 5-year old male diagnosed with GER and poor gastric motility. Diet consisted exclusively of peanut butter sandwiches, crackers, cookies, and chocolate pudding.

Oscar, a 4-year old male diagnosed with GER, mild CP, asthma, and food allergies. Diet consisted exclusively of strawberry Pop-tarts and Boost ®.

Percentage of trials in which the food was consumed was used as dependent measure.

PROCEDURES

Preference Assessment

The mother of each participant identified 15 (Jimmy) or 16 foods (Oscar) that they would like their sons to consume. These foods were presented in paired-choice assessment similar to that described by Fisher et al. (1992). Each food was presented with every other food for a total of 105 (Jimmy) or 120 (Oscar) pairings. The order of the pairings was randomly determined. Each pairing was presented for 5 seconds. The participant was instructed to pick one. If a choice was made the participant was allowed 20 seconds to consume the choice. Praise was delivered for choosing and consuming. No other consequences were provided. If the participant did not choose a food, the foods were represented for an additional 5 seconds. If no choice was made the foods were removed and the next pair of foods was presented. Ten of the 15 (Jimmy) or 16 (Oscar) foods were randomly chosen and targeted during treatment.

Once the participant was consuming at least one ounce of each of the ten foods during meals conducted under treatment conditions, the preference assessment was repeated presenting all 15 or 16 foods. Inter-observer agreement was collected during at least 33% of trials for both assessments for each participant. The mean agreement coefficient was 100%.

RESULTS

During the pre-treatment food preference assessment, Jimmy consumed bites of three foods (yogurt, apples, and green beans). Oscar did not consume any of the foods presented during the pre-treatment preference assessment.

During the post-treatment food preference assessment both Jimmy's and Oscar's consumption of additional foods increased. With the exception of one non-exposed food (apple), Jimmy chose to consume only exposed foods during the post-treatment assessment. Three exposed foods were not chosen during any pairing during the post-treatment assessment. Oscar did not choose any non-exposed food to consume during the post-treatment assessment. His consumption of some exposed foods increased during the post-treatment assessment.

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DISCUSSION

This study provides evidence that exposure may contribute to the food preferences of children exhibiting severe food selectivity. Children exhibiting severe food selectivity may demonstrate preferences for foods after they have been successfully exposed to novel foods under treatment conditions. Additional research should be conducted examining varying levels of exposure (e.g., licking food vs. swallowing food) on food preference.

AN EVALUATION OF TWO METHODS FOR PRESENTING NEW FOODS TO CHILDREN EXHIBITING FOOD SELECTIVITY Annmarie Marando, Merrill Berkowitz, Paula Tokar & Ines Huggle

Research has examined the rate of acquisition of unknown items when varying ratios of known to unknown items are presented. This research has indicated that when a higher percentage of unknown items are presented, acquisition to these items will occur at a higher rate (Roberts and Shapiro, 1996). Ahearn (2002) examined the rates of acquisition of acceptance when presenting 1 new food as compared to multiple new foods to children exhibiting feeding difficulties and found that presenting 1 new food resulted in more rapid acquisition of acceptance as compared to multiple new foods. The current study examines the rate of acquisition towards the consumption of new or unknown food items when two ratios (i.e., 50:50 and 100:0) of unknown to known food items are presented to children exhibiting food selectivity.

PARTICIPANTS AND DEPENDENT MEASURES

Danny, a 5-year old male diagnosed with GER and poor gastric motility. His diet consisted exclusively of oatmeal and crackers.

Cathy, a 3-year old female diagnosed with GER. Diet consisted exclusively of chocolate chip waffles and French Fries.

Accept: Percentage of trials in which the bite of a target food was accepted within 5 seconds of presentation.
Mouth Clean: Percentage of trials in which an accepted bite of a target food was swallowed within 30 seconds.

PROCEDURES

Sessions were 15 minutes in length. A bite was presented approximately every 30 seconds. During 50% new food condition 30 bites were presented. A new food and identified preferred food were presented in rotation. During 100% new food condition 15 bites were presented. Two new foods were presented in rotation.

New foods were assigned to either condition.

DRA ACC: Bite was presented for 5 seconds every 30 seconds. Acceptance resulted in access to preferred toys and attention. Refusal resulted in removal of spoon and no attention until next bite presentation.

EE+DRA ACC: Same as above with addition of presenting each bite to child's lips until acceptance occurred. All disruptive behaviors blocked or ignored.

PG+ DRA ACC: Same as above with addition of a Nuk Brush coated with food placed in between child's teeth and cheek contingent upon refusal (>5 sec).

PG + REP + DRA MC: Same as PG+DRA ACC with addition of replacing expelled bite and providing access to praise and preferred toys contingent upon swallowing the bite.

EE + REP + DRA MC: Same as above without the use of PG.

A multielement design was used to evaluate acquisition rates across conditions.

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RESULTS

For Danny, there was no noticeable difference in the rate of acquisition for acceptance and swallowing of new foods under the 50% new and 100% new food conditions. For Cathy, the rate of acquisition for acceptance and swallowing of new foods was more rapid under the 100% new food condition as compared to the 50% new food condition. For Danny acceptance did not increase until a physical guidance procedure was implemented. Occurrences of swallowing new foods did not increase until an escape extinction component (Representation) with positive reinforcement for swallowing was implemented. Cathy's acceptance and swallowing of new foods increased upon implementation of an escape extinction component with positive reinforcement.

DISCUSSION

This study provides some evidence that acquisition to consume new foods may occur at a faster rate when new foods are presented alone as compared to presenting new foods with familiar or preferred foods for one child. Consumption of new foods may be acquired faster for children exhibiting food selectivity when only new foods are presented as compared to when presented with a preferred food. An escape extinction or physical guidance procedure was utilized to increase each of these participant's consumption of new foods. Some of the limitations of this study should be noted. First, functional control of the treatment components was not obtained. Second, the number of new foods presented in each condition during each meal was not the same (e.g., 1 in the 50% new and 2 in the 100% new). Third, clear differences between conditions were observed for only 1 participant

Additional research should be conducted examining varying ratios of preferred to new foods (e.g., 33%: 67, 25%75%) and with additional participants. (key to terms, page 12)

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DRA Acc means that bites are presented for up to 5 seconds and the child receives praise and access to preferred toys if acceptance of the bite occurs.

EE+DRA Acc means that the bite is presented to the child's lips until acceptance occurs and the child receives praise and access to preferred toys when acceptance of the bite occurs.

PG+DRA Acc means that the bite is presented from the spoon for 5 seconds, if the child does not accept the bite within 5 seconds of presentation, a dry Nuk brush is inserted between the child's cheek and teeth. When the child opens, the spoon is placed in the child's mouth. The child receives praise and access to preferred toys when acceptance of the bite occurs.

PG+REP+DRA MC: Same as PG+DRA ACC with addition of replacing expelled bite and providing access to praise and preferred toys contingent upon swallowing the bite.

On the Research Front:

Hassall E, Kerr W, El-Serag HB. (2007). Characteristics of children receiving proton pump inhibitors continuosly for up to 11 years duration. *Journal of Pediatrics*. Mar; 150 (3): 262-7, 267.e1.

This study looked at pediatric patients to determine the safety of long-term use of proton pump inhibitors (PPI's). The authors concluded that children with underlying GERD-predisposing disorders compose the majority of long-term PPI users. Few adverse reactions to these drugs occur, and discontinuation of the drug is seldom indicated. These preliminary data suggest that PPIs may be efficacious and safe for continuous use for up to 11 years' duration in children.

Scarborough DR, Isaacson LG. (2006) Hypothetical anatomical model to describe the aberrant gag reflex observed in a clinical population of orally deprived children. *Clin Anat*. Oct;19(7):640-4.

The authors propose a hypothetical anatomical model to explain the abnormal gag reflex that is consistently observed in children experiencing feeding delays. This model is based on the presence of 'transient' connections formed during the normal development of autonomic brainstem circuitry involving the nucleus tractus solitarius (NTS). It is proposed that, as a result of normal feeding and swallowing, the activity of these transient fibers typically diminishes shortly after birth. In children who are orally deprived during infancy, these transient connections persist and the aberrant gag reflex is maintained into childhood. The most critical feature of the proposed model is the idea that swallowing during feeding initiates the retraction of the tactile 'transient' input to NTS. In the NICU feeding clinics, it has been suggested that triggering the gag reflex in neonates by tactile stimulation of non-oral body areas and anterior portions of the mouth directly or indirectly may contribute to oral feeding delays. To the contrary, it is proposed that oral feeding delays and lack of swallowing food, when experienced by neonates, actually contribute to the development of the aberrant gag reflex observed in later developmental stages.